

ANNUAL AND INTERANNUAL VARIABILITIES OF ASIAN MONSOON REVEALED BY SPACEBASED OBSERVATIONS

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- **Data**
- **Seasonal changes**
- **Interannual changes**
- **Ocean responses**
- **Summary**

DATA

ERS wind 92-96 & NSCAT wind 9/96-6/97

Tang and Liu 1996; Liu et al. 1998

TOPEX/POSEIDON sea level 10/92-12/97

Fu et al. 1994

SSMI integrated WV and LHF 7/87-6/98

Wentz 1996

Reynolds SST 82-98

Reynolds and Smith 1994

COADS 1950-1999

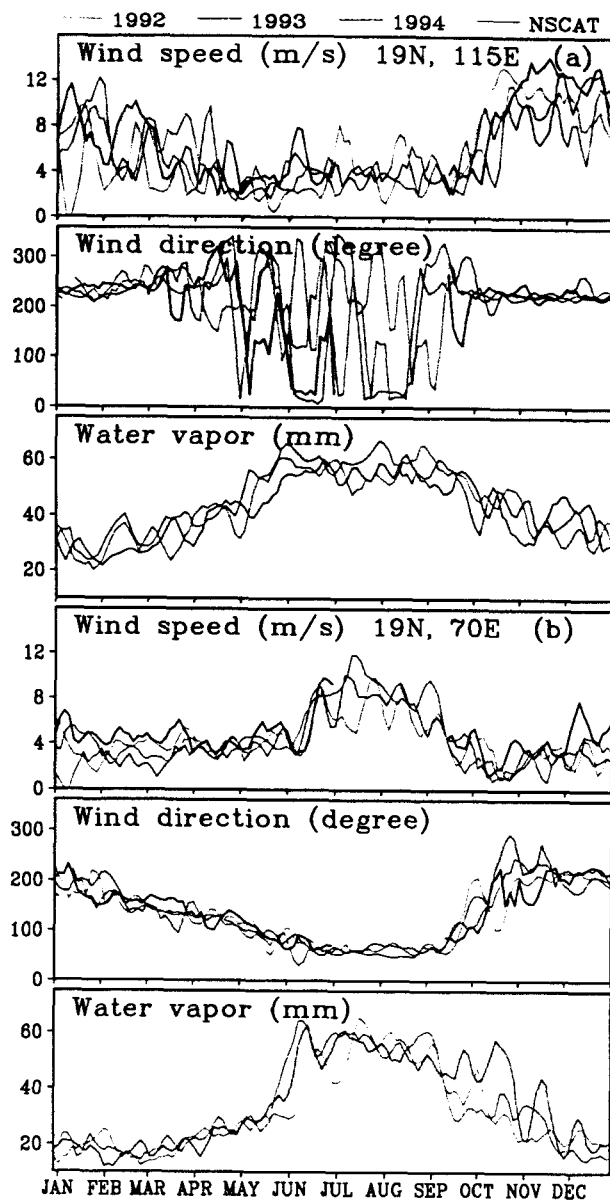
GISST 1950-1999

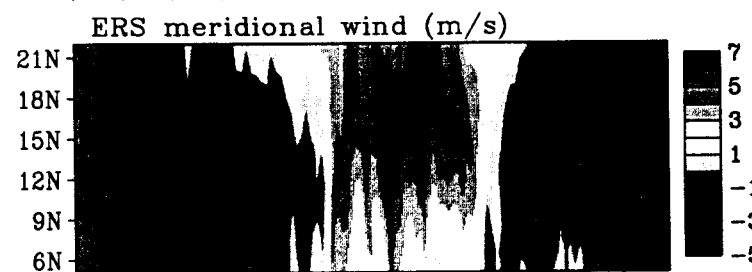
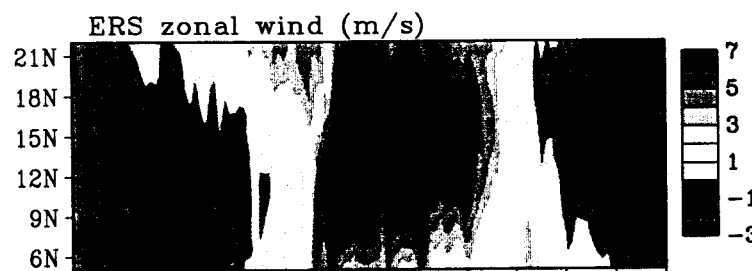
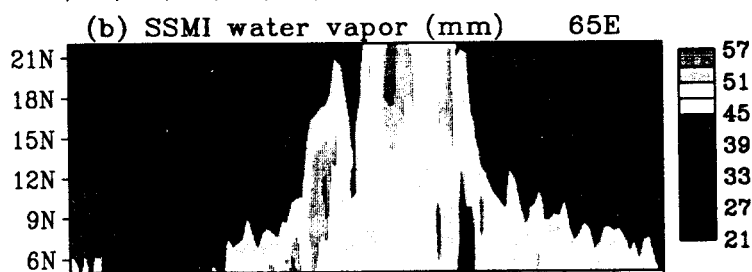
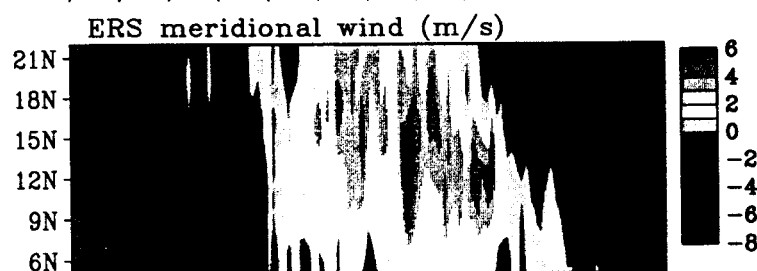
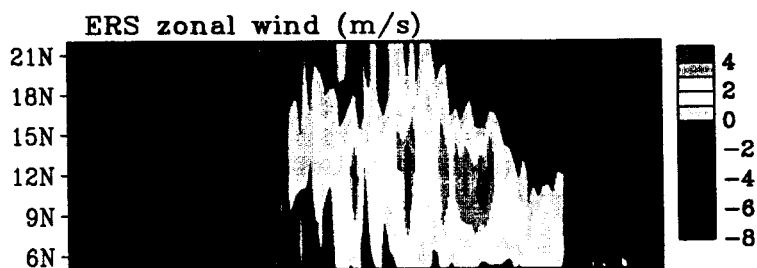
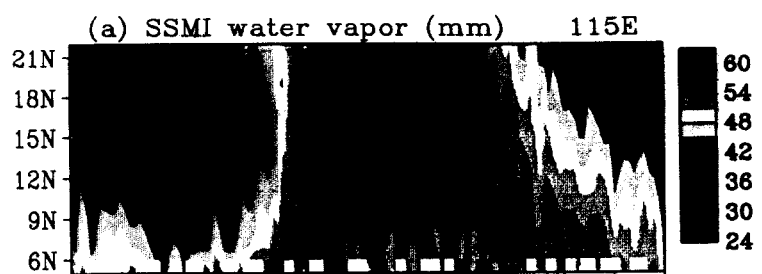
SUMMARY

- Using a combination of spacebased data, the distinctive features of the winter and summer monsoon in South China Sea (SCS) and Arabian Sea (AS) were examined.
- The annual variations of SST and sea level in both SCS and AS are consistent with the Ekman pumping scenario.
- Annual reversal of the ocean circulation in the SCS basin is attributed to the seasonal change of the surface wind induced reversal of the Ekman drift.
- The interannual variations of East Asian monsoon is closed linked to tropical Pacific SST. Westerly (easterly) anomalies associated with the cyclonic (anticyclonic) anomalies over the Philippines may provide negative feedback to eastern Pacific cooling (warming).

Annual and interannual variabilities of Asian monsoon revealed by spacebased observations

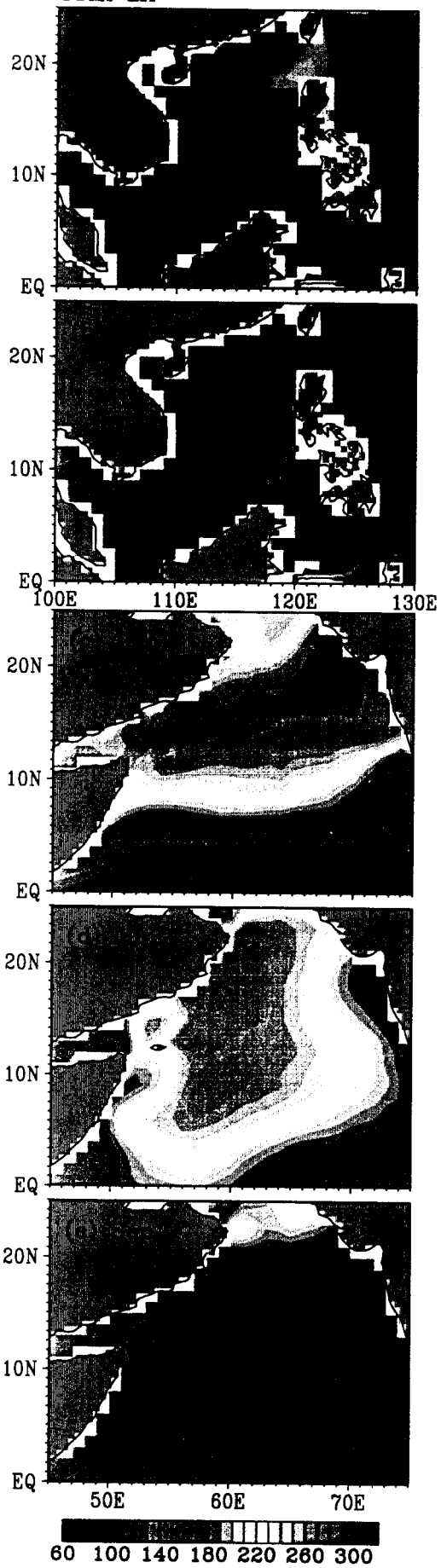
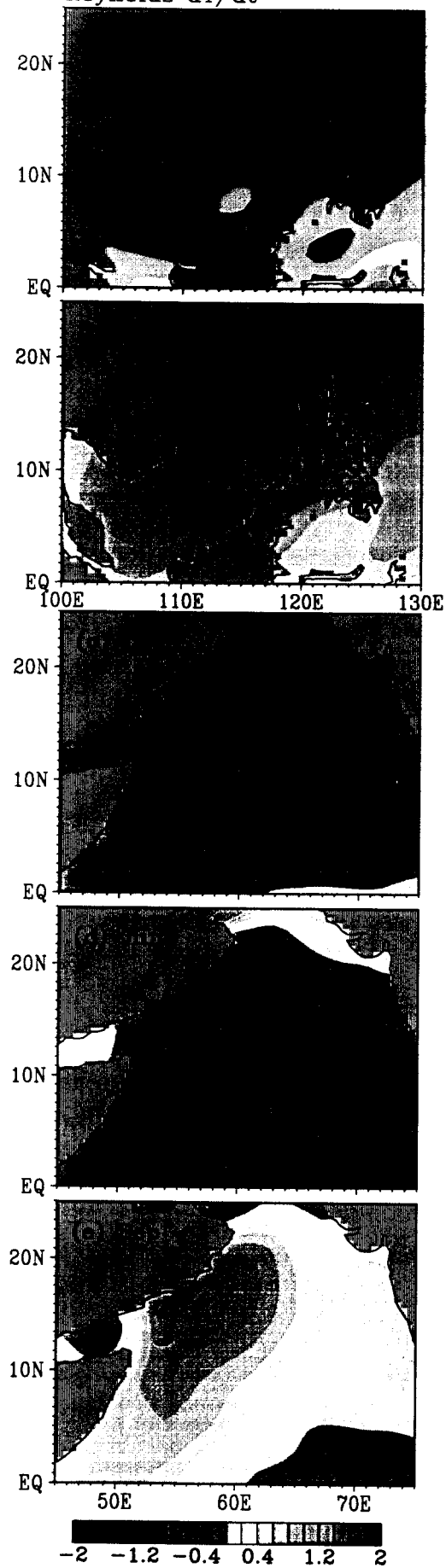
A significant portion of the world's population is under the influence of monsoon changes. Better understanding of physical processes governing the evolution of Asian monsoon is not only important for regional climate variation, but also crucial to global climate variation. Surface wind vectors derived from spacebased scatterometers, along with other spaceborne observations, and Reynolds sea surface temperature (SST) are used to study the annual and interannual variations of the Asian monsoon. Interannual variability of the Asian monsoon is linked to the Pacific SST. Feedback between SST and surface wind at various stages of warm and cold events is analyzed. In addition, Comprehensive Ocean-Atmosphere Data Set (COADS) surface wind and Global sea Ice and Sea Surface Temperature (GISST) data are applied to reveal the interdecadal variations associated with the Asian monsoon and Pacific SST. Possible mechanisms of transition between warm phases of interannual and interdecadal variations are also discussed.





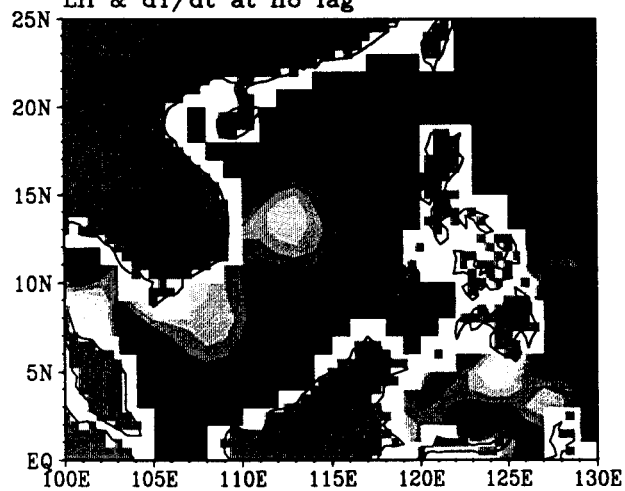
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

SSMI LH

Reynolds dT/dt 

Correlation coefficient

LH & dT/dt at no lag



Correlation coefficient

Stress curl leads SLH by 1 month

